

Chapter 85 – GEOLOGICALLY HAZARDOUS AREAS

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85.05 User Guide

1. This chapter establishes special regulations that apply to development on property containing geologically hazardous areas. These regulations add to and, in some cases, supersede other regulations of this code. See Chapter [95](#) KZC for additional regulations that address trees and other vegetation within and outside of geologically hazardous areas.
2. If you are interested in developing property that contains a geologically hazardous area, or if you wish to participate in the City's decision on a proposed development on any of these areas, you should read this chapter.

85.10 Applicability

1. General – This chapter applies to any property that contains any of the following:
 - a. An erosion hazard area.
 - b. A landslide hazard area.
 - c. A seismic hazard area.
2. Conflict with Other Provisions of this Code – The provisions of this chapter supersede any conflicting provisions of this code. The other provisions of this code that do not conflict with the provisions of this chapter apply to property that contains a geologically hazardous area. If more than one provision of this chapter applies to the subject property because of the presence on the subject property of more than one type of geologically hazardous area, then the regulations that provide the greatest protection from the hazardous area shall apply to the area governed by multiple regulations.
3. SEPA Compliance – Nothing in this chapter or the decisions made pursuant to this chapter in any way affect the authority of the City to review, condition, and deny projects under SEPA.

85.12 Environmentally Sensitive Areas (ESA) Maps

As part of the City's SEPA Ordinance, City Council adopts, and from time to time amends, a map folio entitled "Kirkland Sensitive Areas." This folio contains maps entitled "Seismic Hazards" and "Landslide and Erosion Hazards." These maps will be used as a guide only to determine the presence of seismic hazards, erosion hazards, and landslide hazards, and the determination regarding whether these hazards exist on or near the subject property will be based on the actual characteristics of these areas and the definitions of this code.

85.13 Definitions

The following definitions apply throughout this code, unless, from the context, another meaning is clearly intended:

1. Environmentally Sensitive Areas Maps – As defined in Chapter 90 KZC.
2. Erosion Hazard Areas – Those areas containing soils which, according to the USDA Soil Conservation Service King County Soil Survey dated 1973, may experience severe to very severe erosion hazard. This group of soils includes, but is not limited to, the following when they occur on slopes of 15 percent or greater: Alderwood gravelly sand loam (AgD), Kitsap silt loam (KpD), Ragnar Indianola Association (RdE) and portions of the Everett gravelly sand loams (EvD) and Indianola Loamy fine sands (InD).
3. Geologically Hazardous Areas – Landslide hazard areas, erosion hazard areas and seismic hazard areas.
4. Landslide Hazard Areas – Both of the following:
 - a. High Landslide Hazard Areas – Areas sloping 40 percent or greater, areas subject to previous landslide activities and areas sloping between 15 percent and 40 percent with zones of emergent groundwater or underlain by or embedded with impermeable silts or clays.
 - b. Moderate Landslide Hazard Areas – Areas sloping between 15 percent and 40 percent and underlain by relatively permeable soils consisting largely of sand and gravel or highly competent glacial till.
5. Seismic Hazard Areas – Those areas subject to severe risk of earthquake damage as a result of seismically induced settlement or soil liquefaction, which conditions occur in areas underlain by cohesionless soils of low density usually in association with a shallow groundwater table.

85.14 Erosion Hazard Areas

Regulations to control erosion are contained within KMC Title 15 and in other codes and ordinances of the City. Development activity within erosion hazard areas is regulated using these other provisions of this code and other City codes and ordinances and may be subject to increased scrutiny and conditioning because of the presence of an erosion hazard area.

85.15 Required Information – Landslide Hazard Areas and Seismic Hazard Areas

The City may require the applicant to submit some or all of the following information, consistent with the nature and extent of the proposed development activity, for any proposed development activity in a landslide hazard area or seismic hazard area or on property which may contain one of these areas based on the environmentally sensitive areas maps or preliminary field investigation by the Planning Official:

1. A topographic survey of the subject property, or the portion of the subject property specified by the Planning Official, with contour intervals specified by the Planning Official. This mapping shall contain the following information:
 - a. Delineation of areas containing slopes 15 percent or greater.
 - b. The proximity of the subject property to streams.
 - c. The location of structured storm drainage systems on the subject property.
 - d. Existing vegetation, including size and type of significant trees.
2. A geotechnical investigation, prepared by a qualified geotechnical engineer or engineering geologist, to determine if a landslide hazard area or seismic hazard area exists on the subject property.

3. A geotechnical report, prepared by a qualified geotechnical engineer or engineering geologist, showing and including the following information:
 - a. A description of how the proposed development will or will not affect slope stability, surface and subsurface drainage, erosion, and seismic hazards on the subject and adjacent properties.
 - b. Evidence, if any, of holocene or recent landsliding, sloughing, or soil creep.
 - c. The location of springs, seeps, or any other surface expression of groundwater, and the location of surface water or evidence of seasonal runoff or groundwater.
 - d. Identification of existing fill areas.
 - e. Soil description in accordance with the United Soil Classification Systems.
 - f. Depth to groundwater and estimates of potential seasonal fluctuations.
4. Geotechnical recommendations, prepared by a qualified geotechnical engineer, for special engineering or other mitigation techniques appropriate to the hazard area along with an analysis of how these techniques will affect the subject and adjacent properties, including discussions and recommendations on the following:
 - a. The present stability of the subject property, the stability of the subject property during construction, the stability of the subject property after all development activities are completed and a discussion of the relative risks and slide potential relating to adjacent properties during each stage of development.
 - b. Location of buildings, roadways, and other improvements.
 - c. Grading and earthwork, including compaction and fill material requirements, use of site solids as fill or backfill, imported fill or backfill requirements, height and inclination of both cut and fill slopes and erosion control and wet weather construction considerations and/or limitations.
 - d. Foundation and retaining wall design criteria, including bearing layer(s), allowable capacities, minimum width, minimum depth, estimated settlements (total and differential), lateral loads, and other pertinent recommendations.
 - e. Surface and subsurface drainage requirements and drainage material requirements.
 - f. Assessment of seismic ground motion amplification and liquefaction potential.
 - g. Other measures recommended to reduce the risk of slope instability.
 - h. Any additional information believed to be relevant by the geotechnical engineer preparing the recommendations or requested by the Planning Official.

85.20 Required Review – Landslide Hazard Areas and Seismic Hazard Areas

1. General – Except as specified in subsection (2) of this section, the City will administratively review and decide upon any proposed development activity within a landslide hazard area or seismic hazard area.
2. Other Approval Required – If the proposed development on the subject property requires approval through Process I, IIA, IIB, or III, described in Chapters [145](#), [150](#), [152](#), and [155](#) KZC, respectively, the proposed development activity within the landslide hazard area or seismic hazard area will be reviewed and decided upon as part of that other process.

85.25 Performance Standards – Landslide Hazard Areas and Seismic Hazard Areas

(See also Chapter [95](#) KZC)

As part of any approval of development in a landslide hazard area or seismic hazard area, the City may require the following to protect property and persons:

1. Implementation of the geotechnical recommendations to mitigate identified impacts, along with a written acknowledgment on the face of the plans signed by the architect, engineer, and/or designer that he/she has reviewed the geotechnical recommendations and incorporated these recommendations into the plans.
2. Funding of a qualified geotechnical engineer or engineering geologist, selected and retained by the City subject to a three-party contract, to review the geotechnical report and recommendations.
3. That a qualified geotechnical professional be present on-site during land surface modification and foundation installation activities, and submittal by a geotechnical engineer of a final report prior to occupancy, certifying substantial compliance with the geotechnical recommendations and geotechnical-related permit requirements.
4. The retention of any and all trees, shrubs, and groundcover, and implementation of a revegetation plan including immediate planting of additional vegetation.
5. Specifically engineered foundation and retaining wall designs.
6. The review of all access and circulation plans by the Department of Public Works.
7. Limitation or restriction of any development activity that may:
 - a. Significantly impact slope stability or drainage patterns on the subject property or adjacent properties;
 - b. Cause serious erosion hazards, sedimentation problems or landslide hazards on the subject property or adjacent properties; or
 - c. Cause property damage or injury to persons on or off the subject property.
8. Dedication of one or more natural greenbelt protective easements or tracts.

85.30 Appeals

All classifications, decisions, and determinations made under this chapter are appealable using, except as stated below, the applicable appeal provisions of Chapter [145](#) KZC:

1. The appeal may be filed by the applicant or any other aggrieved person within 15 days of the date of the City's written classification, determination, or decision.
2. If a proposed development activity on the subject property required approval through Process IIA, IIB, or III, described in Chapters [150](#), [152](#), and [155](#) KZC, respectively, any appeal of a classification, determination, or decision under this chapter will be heard as part of that other process.

85.35 Bonds

The City may require a bond under Chapter [175](#) KZC and/or a perpetual landscape maintenance agreement to ensure compliance with any aspect of this chapter or any decision or determination made under this chapter.

85.40 Dedication

The City may require that the applicant dedicate development rights, air space, or an open space

easement to the City to ensure the protection of any landslide hazard area or seismic hazard area on the subject property.

85.45 Liability

Prior to issuance of any development permit, the applicant shall enter into an agreement with the City, which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from development activity on the subject property which is related to the physical condition of the property. The applicant shall record this agreement with the King County Department of Elections and Records.

85.50 Request for Determination

1. General – The determination of whether a geologically hazardous area exists on the subject property and the boundaries of that geologically hazardous area will normally be made when the applicant applies for a development permit for the subject property. However, a property owner may, pursuant to the provisions of this section, request a determination from the City regarding whether a geologically hazardous area exists on the subject property and the boundaries of the geologically hazardous area.
2. Application Information – The applicant shall submit a letter of request along with a vicinity map and site plan indicating the location of the potential geologically hazardous area and other information, as appropriate.
3. Review – A request for determination of whether a geologically hazardous area exists on the subject property, the location of the geologically hazardous area, and the type of geologically hazardous area will be made using the definitions, procedures, and criteria of this chapter, as appropriate.
4. Decision – Determinations regarding geologically hazardous areas pursuant to this section will be made by the Planning Official.
5. Appeals – Appeals from decisions made under this section will be reviewed and decided upon pursuant to KZC [85.30](#).
6. Effect – Any decision made under this section will be used by the City in any development activity proposed on the subject property for which an application is received within two years of the final decision of the City under this section; provided, that the City may modify any decision made under this section any time physical circumstances have markedly and demonstrably changed on the subject property or the surrounding areas as a result of natural processes or human activity.